

WHAT IS CLAIMED IS:

1. A method for manufacturing a semiconductor device comprising the steps of:  
forming a semiconductor film over a substrate;  
forming an insulating film over the semiconductor film;  
forming a conductive film over the insulating film; and  
etching the conductive film, the insulating film and the semiconductor film to form a gate electrode, a gate insulating film and a semiconductor island, respectively, so that the semiconductor island has a protrusion and edges of the gate electrode, the gate insulating film and the protrusion are substantially aligned with each other.
2. A method according to claim 1, wherein a channel region is formed in the protrusion.
3. A method according to claim 1, wherein the etching is performed by an RIE method.
4. A method according to claim 1, wherein the semiconductor film is crystallized by irradiating a laser light.
5. A method for manufacturing a semiconductor device comprising the steps of:  
forming a semiconductor film over a substrate;  
forming an insulating film over the semiconductor film;  
forming a conductive film over the insulating film; and  
etching the conductive film, the insulating film and the semiconductor film to form a gate electrode, a gate insulating film and a semiconductor island, respectively, so that the semiconductor island has a protrusion and edges of the gate electrode, the gate insulating film and the protrusion are substantially aligned with each other,  
wherein the protrusion has a height of 200 to 2000 angstroms.
6. A method according to claim 5, wherein a channel region is formed in the protrusion.

7. A method according to claim 5, wherein the etching is performed by an RIE method.

8. A method according to claim 5, wherein the semiconductor film is crystallized by irradiating a laser light.

9. A method for manufacturing a semiconductor device comprising the steps of:  
forming a semiconductor film over a substrate;  
forming an insulating film over the semiconductor film;  
forming a conductive film over the insulating film; and  
etching the conductive film, the insulating film and the semiconductor film to form a gate electrode, a gate insulating film and a semiconductor island, respectively, so that the semiconductor island has a protrusion and edges of the gate electrode, the gate insulating film and the protrusion are substantially aligned with each other,  
wherein the gate electrode comprises a material selected from the group consisting of polysilicon, aluminum, chromium, molybdenum and tantalum.

10. A method according to claim 9, wherein a channel region is formed in the protrusion.

11. A method according to claim 9, wherein the etching is performed by an RIE method.

12. A method according to claim 9, wherein the semiconductor film is crystallized by irradiating a laser light.

13. A method for manufacturing a semiconductor device comprising the steps of:  
forming a semiconductor film over a substrate;  
forming an insulating film over the semiconductor film;  
forming a conductive film over the insulating film;  
etching the conductive film, the insulating film and the semiconductor film to form a gate electrode, a gate insulating film and a semiconductor island, respectively, so that the semiconductor island has a protrusion and edges of the gate electrode, the gate insulating film and the protrusion are substantially aligned with each other;

doping an impurity element into the semiconductor island to form source and drain regions,

wherein a thickness  $T_a$  of the source and drain regions and a thickness of the protrusion  $T_b$  satisfy  $0.3 < T_b/T_a < 0.9$ .

14. A method according to claim 13, wherein a channel region is formed in the protrusion.

15. A method according to claim 13, wherein the etching is performed by an RIE method.

16. A method according to claim 13, wherein the semiconductor film is crystallized by irradiating a laser light.